

REVIEWS OF BOOKS

GENETICS

Shields, James. *Monozygotic Twins Brought up Apart and Brought up Together.* Foreword by **Eliot Slater.** London 1962. Oxford University Press. Pp. x + 264. Price 50s.

GALTON FIRST DREW attention in 1875 to the value of twin studies in elucidating the importance of heredity. In 1925, fifty years later, Müller drew attention to the special value of identical twins reared apart when he reported a re-investigation of such a pair first described by Popenoe in 1922. The first series of such separated twins was reported by Newman, Freeman and Holzinger in 1937. Altogether, they found nineteen pairs reared apart and were able to add a twentieth pair in 1940. Since then only individual pairs have been reported until 1943 when Burt published correlations for Binet I.Q. for fifteen British pairs brought up apart.

The present series was collected following a B.B.C. appeal in a programme on twins in 1953. A total of forty-four identical pairs brought up apart were discovered and investigated; the great majority of them were interviewed by the author. Most of the pairs had been separated within six months of birth and not reunited until after they had left school. The investigation involved a personal interview, two intelligence tests, and the completion of a self-rating questionnaire for personality traits. Short biographies are given for each twin pair, and, in addition, there is an analysis of the intra-class correlations of the separated pairs for intelligence and two aspects of personality, introversion and extraversion, and neuroticism. The biggest contrast between the environments of any twin pair was in the case of a pair of identical twin girls one of whom had been brought up in a doctor's family in South America and the other by a Scandinavian ship's carpenter.

In the analyses the correlations for the separated identical twins were compared with those of a control group of identical twins, brought up together, and a small sample of fraternal twins, brought up together. On the intelligence test scores which consisted of a dominos test and the synonym section of the Mill Hill

vocabulary scale, the resemblance of the identical pairs brought up apart was as close as that of the identical pairs brought up together, 0.77 and 0.76; for the fraternal twin pairs brought up together, the correlation was 0.51. There was therefore no indication that the different upbringing of the separated twins had caused any difference in the development of their ability to do intelligence tests. For the introversion-extraversion dimension of personality the correlation for the separated pairs was 0.61 and for neuroticism the correlation was 0.53. For identical pairs brought up together, the corresponding correlations were 0.42 and 0.38. For these personality traits, then, the separated pairs were actually more alike than the pairs brought up together. This suggests that the very fact of identical pairs being brought up together causes them to become somewhat unlike in personality. While the correlations for the identical pairs brought up apart are a strong indication of the importance of genetic factors in the development of these aspects of personality. Dr. Shields supplemented the self-rating questionnaire by personal interview of the twin pairs in which he attempted to estimate their personality characteristics and, like the questionnaire results, his findings indicated an often remarkable resemblance in the personalities of the separated identical pairs.

This was a soundly planned survey, and it is well described. The reviewer is sorry that more emphasis was not given to the intellectual difference between the identical pairs brought up apart; but the emphasis on personality tests is understandable in a survey from a psychiatric unit. The author is able to conclude that differences in early family structure and upbringing do not stand out as important causes of differences in later personality or intelligence.

C. O. C.

Moran, P. A. P. *The Statistical Processes of Evolutionary Theory.* Oxford 1962. Clarendon Press: Oxford University Press. Pp. vii + 200. Price 38s.

PROFESSOR MORAN'S BOOK follows close